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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NGUYEN, PHU K	

ART UNIT	PAPER NUMBER
2671	10

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/496,137	SCHKOLNE ET AL.	
	Examiner	Art Unit	
	Phu K. Nguyen	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-31 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-31 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Phu Nguyen

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over NISHINO et al. (3D Object Modeling Using Spatial and Pictographic Gestures).

As per claim 1, Nishino teaches the claimed "method of producing a shape, comprising: "using a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals

because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

As per claim 2, Nishino teaches the claimed "method of producing a shape", comprising: "using a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9), "wherein an inside surface of the hand is used to form the modeled surface, by tracking movement of a tangent to the hand, to define a tangent plane of a surface being created" (Nishino, page 55, column 1, lines 37-39, the user shapes the object with the deform posture in which the surface of the object is a tangent to the hand). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Claim 3 adds into claim 2 "said using comprises tracking hand movement is tracked via a tracker and glove" which Nishino teaches in page 55, column 1, lines 19-21.

Claim 4 adds into claim 1 "method as in claim 1 further comprising using an incremental technique to take an existing mesh of samples and changing it to add a new sample" which Nishino teaches in page 55, column 1, lines 39-41, with the deform and point postures to incrementally shape the object through its samples.

As per claim 5, Nishino teaches the claimed "method of producing a shape, comprising: "using a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9); "using an incremental technique to take an existing mesh of samples and changing it to add a new sample, wherein said technique comprises finding a neighborhood of samples, identifying a surface region, removing identified parts, and creating new parts to replace the identified parts, where the new parts take a new sample into account" which Nishino teaches in page 55, column 1, lines 39-41, with the deform and point postures to incrementally shape the object through its samples. It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Claim 6 adds into claim 5 "said technique utilizes a projective plane to determine how the new parts should be formed" which Nishino teaches in page 55, column 1, lines 5-10.

As per claim 7, Nishino teaches the claimed "method of producing a shape, comprising: "using a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9), "wherein the surface is selected as a normal to the surface of the hand" (Nishino, deform posture, page 55, column 1, lines 37-39, the user shapes the object with the deform posture in which the surface of the object is a tangent to the hand). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Claim 8 adds into claim 1 "defining a first hand position which defines a starting position and a second hand position which defines a stopping of drawing" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious because such claimed hand gestures provides the gesture based interface to improve the

interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 9 adds into claim 1 "defining a hand position which forms an eraser tool" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 10 adds into claim 1 "modifying the drawing using one of a plurality of props" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious because such claimed hand gestures as props provides the gesture-based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 10 adds into claim 1 "modifying the drawing using one of a plurality of props" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious because such claimed hand gestures as props provides the gesture-based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 11 adds into claim 10 "said props are tongs which can be squeezed and moved to rotate the shape" which Nishino does not explicitly teach. However, given

Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34, grasp posture), it would have been obvious because such claimed hand gestures as props provides the gesture-based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 12 adds into claim 10 "said prop is a spherical ball" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34, deform posture on the primitive shape; e.g., figure 11-a), it would have been obvious because such claimed hand gestures as props provides the gesture-based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 13 adds into claim 10 "said prop is a sponge which alters a look of the shape" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34, scale and bend postures, e.g., figure 11-b), it would have been obvious because such claimed hand gestures as props provides the gesture-based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 14 adds into claim 13 "said altering is by smoothing" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34, deform, taper and bend postures, e.g.,

figure 11-b), it would have been obvious because such claimed hand gestures as props provides the gesture-based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

As per claim 15, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface based on said position of said user's hand " (Nishino, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at different times" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at different times because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Claim 16 adds into claim 15 "wherein said forming comprises using the hand to create 3d-strokes of shape" which Nishino teaches in page 55, column 1, lines 37-41.

Claim 17 adds into claim 16 "said using comprises using the bend of the hand to define the curvature of 3d-strokes" which Nishino teaches in the deform posture (Nishino, page 55, column 1, lines 37-39, the user shapes the 3D object with the deform posture in which the curvature 3d surface of the object is a tangent to the hand).

As per claim 18, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface based on said position of said

user's hand" (Nishino, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at different times" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at different times because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner. It is also noted that Nishino does not explicitly teach ""wherein said forming comprises using the hand to create 3dstrokes of shape; further comprising displaying a trace of the path of the hand, sensing at least 7 of the hand's degrees of freedom for the purposes of shape creation, said degrees of freedom including the hand's *position and* orientation in space, along with degrees of freedom that are affected by the hand's posture". However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34, hand posture, hand position, hand orientation, ...), it would have been obvious because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

As per claim 19, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); "forming a three-dimensional modeled surface based on said position of said user's hand" (Nishino, page 56, column 2, lines 3-9); "said forming comprises using the hand to create 3d-Strokes of shape" (Nishino, page 55, column 1, lines 37-39, the user

shapes the 3D object with the deform posture in which the curvature 3d surface of the object is a tangent to the hand); "merging samples from one hand position to an existing shape" (Nishino, the user uses the blend posture to merge the primitive shape represented by its samples to the existing shape). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

As per claim 20, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); "forming a three-dimensional modeled surface based on said position of said user's hand" (Nishino, page 56, column 2, lines 3-9); "said forming comprises using the hand to create 3d Strokes of shape" (Nishino, page 55, column 1, lines 37-39, the user shapes the 3D object with the deform posture in which the curvature 3d surface of the object is a tangent to the hand). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and

intuitive manner. Nishino also does not explicitly teach "said samples are added by deprojecting a shape, removing parts, adding new parts, and reprojecting said shape". However, given Nishino projection method in forming the shape (page 55, column 1, lines 4-15), it would have been obvious to add the samples in the claimed manner because the sequential use of de-projection/re-projection improves the visualization of the shaping process and enhance the user interface capability in shaping object.

Claims 21 adds into claim 15 "using hand postures to switch between different modes of operation" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious to use hand gesture to switch operation modes because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claims 22 adds into claim 15 "a first hand posture comprises a start to track posture" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious to use hand gesture to start to track posture because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claims 23 adds into claim 15 "a second hand posture comprises a stop track posture" which Nishino does not explicitly teach. However, given Nishino's gestures of

natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious to use hand gesture to stop to track posture because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 24 adds into claim 15 "displaying different tools at the hand's position based on different postures" which Nishino teaches in page 56, column 1, lines 18-34, figure 10-b for examples.

Claims 25 adds into claim 15 "using the finger to draw a narrower stroke" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious to use figure to draw a narrow stroke because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

As per claim 26, Nishino teaches the claimed "method of producing a shape, comprising: "a hand tracking element, which tracks three dimensional positions and hand shapes of an operator's hand in a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed.

However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

As per claim 27, Nishino teaches the claimed "shape drawing system", comprising: "a user interface which operates to command shapes to be created" (Nishino, page 55, column 1, lines 19-25, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach "a processing element which incrementally adds surface regions to an extant surface" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations incrementally because the incremental arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Claim 28 adds into claim 27 "wherein said user interface tracks hand movements" which Nishino teaches in page 55, column 1, lines 19-25.

As per claim 29, Nishino teaches the claimed "method of drawing on a computer", comprising: "displaying a first shape on the computer" (Nishino, page 56, column 2, lines 3-9); "using the hand to define a new shape, to be added to said *first* shape" (Nishino, the primitive shapes). It is noted that Nishino does not explicitly teach "using said new shape to apply deformations to said first shape and displaying said first shape as deformed by said new shape". However, given Nishino's deform and blend

gestures, it would have been obvious to deform the existing shape when adding a new shape because such claimed hand-gesture operations provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 30 adds into claim 29 "*wherein* a portion of the first shape moves toward the hand" which Nishino teaches in the examples of 3D object modeling process of the teapot (figure 11-b) in which the shapes are blended, manipulated, and displayed.

As per claim 31, Nishino teaches the claimed "system of 3d shape creation", comprising: "monitoring hand posture" (Nishino, page 55, column 1, lines 19-25). It is noted that Nishino does not explicitly teach "obtaining continuous variables that continuously vary between a maximum value and a minimum value based on said hand posture; and using said variables to define a shape" as claimed. However, Nishino's tracking of hand position which includes the bounded and continuous coordinate variables x, y, z suggests the claimed "continuous variables that continuously vary between a maximum value and a minimum value". It would have been obvious to use that claimed variables to define a shape because Nishino's shape have been defined by the hand gestures including its position and such the use of variables to represent the hand gestures improves the efficiency of calculation during the interactive movement of the user and enhances the computer operations.

Due to new ground of the rejection cited above, this action has been made NON-FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 - 9796. The examiner can normally be reached on M-F 8:00-4:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu K. Nguyen
July 11, 2004